WHAT IS CLAIMED IS:

1. An ink jet printing apparatus which forms an
image on a print medium by moving a print head having
an array of nozzles and the print medium relative to
each other and at the same time ejecting ink droplets
from the nozzles according to print data of the image
to be printed, the ink jet printing apparatus
comprising:

a nozzle information generation means for
generating nozzle information representing an ejection
characteristic of each nozzle according to a landing
state on the print medium of the ink droplet ejected
from each nozzle;

an estimation means for estimating, based on the
nozzle information generated by the nozzle information
generation means and the print data, an effect that
the ink droplet ejected from each nozzle has on the
image to be formed;

a correction information generation means for
generating correction information to correct an ink
ejection condition of each nozzle according to a
result of estimation by the estimation means; and

a control means for controlling a driving of the
nozzles according to the print data and the correction
information.

2. An ink jet printing apparatus according to claim 1, wherein the nozzle information generation means determines, as the nozzle information representing the ejection characteristic of each

5   nozzle, an amount of deviation between an ideal landing position on the print medium of the ink droplet ejected from each nozzle of the print head and an actual landing position of the ink droplet on the print medium.

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3. An ink jet printing apparatus according to claim 1 or 2, wherein the nozzle information generation means determines, as the nozzle information representing the ejection characteristic of each

15   nozzle, an ink ejection enable/disable decision for each nozzle of the print head and a size and/or shape of an ink dot formed by each ink droplet landing on the print medium.

20   4. An ink jet printing apparatus according to claim 1 or 2, wherein the estimation means at least analyzes a component affecting a print density on the print medium.

25   5. An ink jet printing apparatus according to claim 4, wherein the component affecting the print density is a range of print area to be printed by the

ink dot and an area overrunning the range of print
area.

6. An ink jet printing apparatus according to
claim 1 or 2, wherein, in a process of forming an
image, the correction information generation means
generates, based on an estimated result from the
estimation means, the correction information to
correct the ink ejection conditions of nozzles unable
to produce an ideal landing state.

7. An ink jet printing method which forms an image
on a print medium by moving a print head having an
array of nozzles and the print medium relative to each
other and at the same time ejecting ink droplets from
the nozzles according to print data of the image to be
printed, the ink jet printing method comprising:
    a nozzle information generation step for generating
nozzle information representing an ejection
characteristic of each nozzle according to a landing
state on the print medium of the ink droplet ejected
from each nozzle;
    an estimation step for estimating, based on the
nozzle information generated by the nozzle information
generation step and the print data, an effect that the
ink droplet ejected from each nozzle has on the image
to be formed;

a correction information generation step for generating correction information to correct an ink ejection condition of each nozzle according to a result of estimation by the estimation step; and

5   a control step for controlling a driving of the nozzles according to the print data and the correction information.

8. An ink jet printing method according to claim 7,
10 wherein the nozzle information generation step determines, as the nozzle information representing the ejection characteristic of each nozzle, an amount of deviation between an ideal landing position on the print medium of the ink droplet ejected from each
15 nozzle of the print head and an actual landing position of the ink droplet on the print medium.

9. An ink jet printing method according to claim 7 or 8, wherein the nozzle information generation step
20 determines, as the nozzle information representing the ejection characteristic of each nozzle, an ink ejection enable/disable decision for each nozzle of the print head and a size and/or shape of an ink dot formed by each ink droplet landing on the print medium.
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10. An ink jet printing method according to claim 7 or 8, wherein the estimation step at least analyzes

a component affecting a print density on the print
medium.

11. An ink jet printing method according to claim
5 7 or 8, wherein, in a process of forming an image, the
correction information generation step generates,
based on an estimated result from the estimation step,
the correction information to correct the ink ejection
conditions of nozzles unable to produce an ideal
10 landing state.

12. An ink jet printing apparatus which forms an
image on a print medium by moving a print head having
an array of nozzles and the print medium relative to
15 each other and at the same time ejecting ink droplets
from the nozzles according to print data of the image
to be printed, the ink jet printing apparatus
comprising:
a deviation correction means for performing a dot
20 deviation correction based on deviation data
representing an amount of deviation, or a difference,
between an actual landing position of an ink dot
formed on the print medium by the ink droplet ejected
from each nozzle and an ideal landing position of the
25 ink dot; and
a control means for selectively causing the
deviation correction means to execute the dot

deviation correction according to the amount of deviation.

13. An ink jet printing apparatus which forms an image on a print medium by moving a print head having an array of nozzles and the print medium relative to each other and at the same time ejecting ink droplets from the nozzles according to print data of the image to be printed, the ink jet printing apparatus comprising:

a grayscale correction means for performing an ink dot grayscale correction according to density difference data representing a density difference between an actual density of an ink dot formed on the print medium and an ideal density of the dot;

a deviation correction means for performing a dot deviation correction based on deviation data representing an amount of deviation, or a difference, between an actual landing position of an ink dot formed on the print medium by the ink droplet ejected from each nozzle and an ideal landing position of the ink dot; and

a control means for controlling the grayscale correction means and the deviation correction means according to at least the density difference and the amount of deviation.

14. An ink jet printing apparatus according to claim 12 or 13, wherein, when the amount of deviation of an ink dot of interest is found to be greater than a predetermined value, the control means causes the
5   deviation correction means to execute the dot deviation correction.

15. An ink jet printing apparatus according to claim 14, wherein deviation correction means corrects
10   an ink ejection condition of an influencing nozzle that adversely affects the ink dot of interest in landing on the ideal landing position.

16. An ink jet printing apparatus according to
15   claim 15, wherein the influencing nozzle includes at least one of a nozzle for ejecting an ink droplet to form the ink dot of interest and adjoining nozzles.

17. An ink jet printing apparatus according to
20   claim 14, wherein, when the amount of deviation of the ink dot of interest exceeds 10% of a nozzle pitch, the control means causes the deviation correction means to execute the dot deviation correction.

25   18. An ink jet printing apparatus according to claim 14, wherein, when the amount of deviation of the ink dot of interest exceeds 25% of a nozzle pitch, the

control means causes the deviation correction means to execute the dot deviation correction.

19. An ink jet printing apparatus according to claim 13, wherein the grayscale correction means corrects, based on the density data, an ink ejection condition of a nozzle corresponding to the density data.

20. An ink jet printing apparatus according to claim 12 or 13, wherein the deviation correction means increases or decreases a volume of ink droplet ejected from the influencing nozzle according to the amount of deviation.

21. An ink jet printing apparatus according to claim 13, wherein the grayscale correction means increases or decreases a volume of ink droplet ejected from the nozzle according to a magnitude of the density difference.

22. An ink jet printing apparatus according to claim 13, wherein the control means controls the deviation correction means and/or the grayscale correction means according to nozzle information representing an ejection characteristic of each nozzle, such as an ink ejection enable/disable decision for

each nozzle and a size and/or shape of an ink dot.

23. An ink jet printing method which forms an
image on a print medium by moving a print head having
5   an array of nozzles and the print medium relative to
each other and at the same time ejecting ink droplets
from the nozzles according to print data of the image
to be printed, the ink jet printing method comprising:
a deviation correction step for performing a dot
10 deviation correction based on deviation data
representing an amount of deviation, or a difference,
between an actual landing position of an ink dot
formed on the print medium by the ink droplet ejected
from each nozzle and an ideal landing position of the
15 ink-dot; and
a control step for selectively causing the
deviation correction step to execute the dot deviation
correction according to the amount of deviation.

20 24. An ink jet printing method which forms an
image on a print medium by moving a print head having
an array of nozzles and the print medium relative to
each other and at the same time ejecting ink droplets
from the nozzles according to print data of the image
25 to be printed, the ink jet printing method comprising:
a grayscale correction step for performing an ink
dot grayscale correction according to density

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difference data representing a density difference between an actual density of an ink dot formed on the print medium and an ideal density of the dot;

a deviation correction step for performing a dot deviation correction based on deviation data representing an amount of deviation, or a difference, between an actual landing position of an ink dot formed on the print medium by the ink droplet ejected from each nozzle and an ideal landing position of the ink dot; and

a control step for controlling the grayscale correction means and the deviation correction means according to at least the density difference and the amount of deviation.